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ABSTRACT

Developed by teachers, the curriculum guide provides information on environmental studies activities for use with handicapped students. Activities are divided into three areas: awareness level activities (aesthetics, cemeteries, water, soil, air, noise, and miscellaneous activities); transition level activities (playgrounds, cemeteries, wildlife, and miscellaneous activities); and operational level activities (site development, erosion, and soil). Such activities as categorizing living and non-living things, playground planning, and siting a problem erosion are included. Outlined for each activity are an introduction, questions, equipment needed, and procedures. A final section consists of teacher statements on activity implementation. Appended are a paper on the U.S. Office of Education national diffusion network, and explanation of environmental studies activities, and technical reports on six of the activities included in the guide. (SBH)

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A CURRICULUM ACTIVITIES GUIDE TO ENVIRONMENTAL STUDIES FOR STUDENTS WITH SPECIAL EDUCATION NEEDS

Edited by
RANDOLPH R. TULLY, JR.
ENVIRONMENTAL SPECIALIST
PROJECT KARE

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MONTGOMERY COUNTY INTERMEDIATE UNIT
COLONY OFFICE BUILDING
RT. 73 & BUTLER PIKE
BLUE BELL, PA. 19422
(215) 643-7600

PROJECT KARE STAFF:
MATTHEW M. HICKEY, DIRECTOR
ALAN D. SEXTON, ASSISTANT DIRECTOR
RANDOLPH R. TULLY, ENVIRONMENTAL SPEC.
JANET A. HYLAND, ADMINISTRATIVE ASST.

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PREFACE

During the summer of 1975, Project KARE staff taught three courses sponsored by the Chester County Intermediate Unit In-Service Council. These were entitled "Environmental Studies For Elementary School Teachers", "Interdisciplinary Environmental Studies", and "Environmental Education Field Studies". Teachers attending one or more of these courses were required to submit several activities as well as a statement of their intent to implement environmental studies in their own classrooms. Although the courses were not designed with teaching the handicapped in mind, several teachers from the Chester County Child Development Center did attend.

The activities in this book are a compilation of their first draft attempts at writing environmental studies activities. A few of the suggestions made by the instructors appear with the activities, printed in upper case letters. It is suggested that these ideas and directions not be considered the end, but rather the beginning of the development of activities for handicapped children. As you read the following activities you will find some designed for "low functioning multiple-physically handicapped" children, some for "trainable mentally retarded" children, some for "academic physically handicapped" teenagers, and some for "normal" children. It is hoped that adaptations will be made for the special needs of your own class.

In the Appendix you will find a descriptor of the USOE National Diffusion Network (and Project KARE's role in it) and instructions (given to the participants) for writing activities. Additionally, several of KARE's technical reports were alluded to in the activities. These are also included.

ACKNOWLEDGEMENTS

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Thanks go to Mr. James F. Bologa, Principal of the Chester County Child Development Center for cordially extending us the use of his building and grounds.

Special thanks go to Jerry Howard, Director, and Jack Padalino, Educational Director, of the Pocono Environmental Education Center for their expertise and the use of their facilities.

The typing skills and perseverence of Mrs. Bette Pasquarello, Miss Janet Hyland, and Mrs. Lisa Tully greatly aided the Editor in the preparation of this book.

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COURSE PARTICIPANTS

Carol A. Hilbert
Barbara Hordwedil
Rex Kelly
William McFadden
Maria G. Maneos
Nancy Morse
James R. O'Brien, Jr.
Karen Reese
William Zinkel

COURSE INSTRUCTORS

Matthew M. Hickey
Dr. Janet C. Seidel
Alan D. Sexton
Dr. Edward L. Strannix
Randolph R. Tully, Jr.
Charles T. Young

AWARENESS LEVEL ACTIVITIES

AWARENESS LEVEL ACTIVITIES

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AESTHETICS.....

Quiet Time

I. Introduction

In order to prepare the children for this activity, they will have had several experiences of listening for certain sounds and recording them. They will also have activities for the sense of touching, smelling, feeling, and seeing. Through these various exercises, it is hoped that the children will become more sensitive to their environment. It will be important for the children to interact with their environment through expression (written or sketched). The children will also have had experience with Haiku poetry.

II. Questions

1. To lead the activity ask:

   a. When you think of the outdoors, what are some of the sounds associated with it?
   b. What are some man-made sounds?
   c. What are some of nature's sounds?
   d. Which are more pleasant to hear?

2. To initiate the activity ask:

   a. Why is it better not to talk when you are listening for the sounds of nature?
   b. Why would it be better not to be too close to someone when you are trying to listen?
   c. What other senses could you use besides hearing when absorbing the things of nature?

3. To continue the activity ask:

   a. Why is it better to use more than one sense when we are exploring nature?
   b. How do you think that you would feel if you attempted to use all of your senses on just one part of nature? Example?

4. To expand the activity ask:

   a. If someone were writing about nature, where do you suppose they could do a better job--outside or inside? Why?
   b. Do you think that you could write or sketch a part of nature, being sure to use as many senses as possible?
   c. What would be some of the things to remember about this "quiet time?"

5. To evaluate the activity ask:

   a. What were some of the things that you saw, heard, felt, smelled, tasted?
   b. How did they make you feel?
   c. What were your thoughts about them?
   d. How did you express those thoughts or feelings?
   e. Would you like to try this again? Why?

III. Equipment

1. Paper
2. Pencil

IV. Procedure

1. Have the children practice writing Haiku indoors.
2. Ask questions associated with the activity.
3. Explain what the children are to do.
4. Have the children go outdoors for "quiet time" for about fifteen or twenty minutes.
5. The children would answer the written evaluation.
6. They would read or show their sketches.
7. The children would discuss their evaluations.

YOUR QUESTIONS TO EXPAND MIGHT BETTER HAVE BEEN LISTED IN THE CONTINUATION SECTION. EXPANSION SHOULD SUGGEST NEW ACTIVITIES BASED ON THE STUDENTS PAST EXPERIENCES.

Aesthetics - STEP Art

I. Introduction

This was designed for academic physically handicapped teenagers, 14-20 years old, to make use of any natural material not man-made outside the classroom. Students will go outside with paper in an area already picked for this purpose. Minimum time would be 1/2 hour - maxiumum time 1 hour.

II. Questions

1. To lead the activity ask:

   a. Man used what kind of materials to write and draw before pens and pencils were invented?
   b. Were there many things written in this fashion?
   c. On what did early man write and draw?

2. To initiate the activity ask:

   a. Are the same materials around us today?
   b. Could we find things other than pens and pencils to draw with?
   c. Would you normally use these materials in drawings?

3. To continue the activity ask:

   a. What materials would we draw on?
   b. What could be used as dyes?
   c. What other material gives color?

4. To expand the activity ask:

   a. Are there areas where we could not find any materials to mark with?
   b. Can you think of what would be the easiest material to make marks with?

5. To evaluate the activity ask:

   a. Which was easier - man-made materials or natural materials?
   b. Why did man make easier writing instruments?
   c. What were your conclusions about using these natural materials outside to draw with?

III. Equipment

1. Paper

2. Tape
3. Glue

IV. Procedure

1. After some discussion and questions, take the group out to the prearranged place.
2. Look for materials to draw with and collect them.
3. Make your pictures.
4. Make conclusions on your own as to how hard or easy it was.

NICE HISTORICAL TIE.

STEP Art

I. Introduction

The children will be given only a piece of white paper. We will take a walk to Kerr Park and do our work there. They will have access to a variety of natural media. They will discover that they can obtain many different textures and colors. The children will be able to use their imagination and be creative.

II. Questions

1. To lead to the activity, ask:

   a. If you were given just a piece of white paper and told to do some type of art activity, what other types of material would you expect to receive besides just the paper?
   b. Would it be possible to complete an art project without any of the things that you have mentioned so far?

2. To initiate the activity, ask:

   a. Could you complete an art project with just a piece of paper and using some things that you find are a part of nature?
   b. What do we mean when we say "a part of nature?"

3. To continue the activity, ask:

   a. What things from nature could we use that would add color to our art work?
   b. What could you use to create some different textures?
   c. Is it possible to do something to the paper besides leaving it flat?
   d. How could you make your art project three-dimensional?

4. To expand the activity, ask:

   a. What do you think will be the most difficult part of the art activity?
   b. What must be done before you actually begin working on your activity?
   c. How will "eye-balling" aid you in this project?

5. To evaluate the activity, ask:

   a. Would you like to do this activity again in a

different season? Why? Which one?

b. Would you have preferred to be given the standard items of crayons, paints, colored pencils, etc.?
c. Were you surprised when you completed your project? Explain.
d. How did you feel when you were thinking about ideas for your project?
e. How did you feel when you were working on the project?
f. How did you feel when your project was completed?

III. Equipment

1. Paper

IV. Procedure

1. The children will first discuss what they could use from nature.
2. The students will be given two pieces of paper and we will walk to Kerr Park.
3. The children will complete the project.
4. They will fill out the evaluation sheet.
5. The children will discuss their projects and display them.

THE EXPANSION SECTION SHOULD BE USED TO SUGGEST FUTURE WORK.

GOOD DEVELOPMENT OF QUESTIONS THROUGH ACTIVITY (ART--NATURE--COLOR--TEXTURE--THREE-DIMENSIONS)

Wheels Of Color

I. Introduction

This activity was designed to refine awareness of shade diversity of color found in the natural environment. Children could work independently or in pairs during a group expedition outdoors in constructing color wheels reflecting tone, shade, tint from materials found in the natural environment. Children of third level or above may enjoy this activity. The activity may take an hour's time from trip embarkation to conclusion.

II. Questions

1. To lead to activity:

   a. What colors have you seen in the natural environment when you have been outdoors?
   b. What colors have you not seen outdoors in the natural environment?

2. To initiate activity:

   a. What varying shades of the same color have you seen?
   b. What color do you see most frequently in the natural environment? How many variations or shades of that color have you seen?

3. To continue activity:

   a. Where could we go here on the grounds at school to discover the greatest diversity of color?

4. To evaluate activity:

   a. Where could we go and find the least diversity of color and shade on the school grounds?
   b. How much diversity in shade and color is there between Rt. 30 and the railroad tracks opposite the school-hospital complex from the D.O. to the railroad overpass on the D.O.'s West?

III. Equipment

1. Boxes for collecting
2. Paper for mounting
3. White glue

IV. Procedure

1. Collect objects of as many different colors and shades

as you may find in the natural environment at site group decides upon.

2. Order the objects according to shade and intensity as you would on a color wheel and mount with glue on your paper.
3. What color had the most shade diversity? Next to most diversity?
4. What color or colors are not represented on your wheel?

COULD SUBSEQUENT STUDIES BE TO COLLECT TEXTURES OR TO ANALYZE SHAPE AND LINE IN THE ENVIRONMENT?

Environmental Literature

I. Introduction

This lesson is geared to low functioning physically handicapped children. It is to expose them to the habitats (natural and man-made) of the common box turtle.

II. Questions

1. To lead to the activity ask:

   a. Where does a box turtle live?
   b. Does he live in a box?
   c. Is that why he is called a box turtle?

2. To initiate the activity ask:

   a. Is it possible for a box turtle to live in a box?
   b. Where outside do you think we could find a box turtle?

3. To continue the activity ask:

   a. What do you think a box turtle eats?
   b. Does he drink water?
   c. Does he swim?
   d. How is a turtle like you and me?

4. To expand the activity ask:

   a. Do you think we could keep a box turtle in a box at school?
   b. What would we have to feed him?
   c. What else would we have to put in the box for him to live?
   d. How often should we clean his home?

5. To evaluate the activity ask:

   a. What other animals can live in a box in your home or classroom?
   b. What animals can live in a bowl in your home or classroom?

III. Equipment

Box turtle, box, food, water, grasses, rocks.

Poem:

There was a little turtle
He lived in a box.
He swam in a puddle,
He climbed on the rocks.
He snapped at a mosquito,
He snapped at a flea,
He snapped at a minnow
and he snapped at me.
He caught the mosquito,
He caught the flea,
He caught the minnow,
But he didn't catch me.

IV. Procedure

Read poem to children. Discuss. Obtain box turtle to keep in classroom for children to observe, and take care of.

WITH A LITTLE PATIENCE AND LUCK YOU MIGHT FIND YOUR BOX TURTLE WHILE ON A TOUR WITH YOUR CLASS. THAT WOULD GIVE YOU A FIRST HAND OPPORTUNITY TO OBSERVE "WHERE HE LIVES". WITH A LITTLE FLEXIBILITY TO YOUR ACTIVITY, YOU MIGHT USE A SALAMANDER, SNAKE, GRASSHOPPER, CATERPILLAR, OR CRAWDAD. IN OTHER WORDS, USE WHAT YOU FIND.

Froggy Poetry

I. Introduction

This activity is geared for young physically handicapped children at the awareness level.

In class, the children will listen to a poem called "The Frog". Then they will be instructed to go out and write their own poem.

The Frog

What a wonderful bird the frog are-
When he stand he sit almost;
When he hop, he fly almost.
He ain't got no sense hardly;
He ain't got no tail hardly either.
When he sit, he sit on what he ain't
got almost.

II. Questions

A. To lead to the activity:

1. Has anyone ever read a poem about wildlife?
2. If so, what poem?

B. To initiate the activity:

1. Who can read the poem "The Frog"?
2. What is the poem about?
3. What animals are compared in it?

C. To continue the activity:

1. What wildlife can we find around our school?
2. What subjects might you write about?

D. To expand the activity:

1. What poems from the library deal with wildlife?
2. What poems deal with the animal or insect that you've written about?

E. To evaluate:

1. Was the lesson appropriate?
2. Was the lesson on grade level?
3. What were the activities?

F. Equipment

1. Library usage - books
2. Paper, pencil
3. Art materials

G. Procedure

1. Student is to go out and write a poem about wildlife - and illustrate it in some type of media.
2. Student will then read poem to class.
3. Teacher will evaluate all materials.

GOOD USE OF THE EXPANSION SECTION.

CEMETERIES.....

Cemeteries-Student Activities

I. Introduction

The students will be split into two groups. One group will be responsible for making up three activities relating math to the cemetery. The other group will be responsible for making up three activities relating science to the cemetery. We will apply six activities when we visit the cemetery.

II. Questions

1. To lead the activity ask:

   a. When we think of math what are some of the basic operations that we use?
   b. What are the things that we do so that we can get a meaningful relationship among numbers?

2. To initiate the activity ask:

   a. How could numbers be related to the cemetery?
   b. What could we do with these numbers?
   c. Could we possibly make some sort of comparisons with our mathematical results?
   d. Would it be necessary to do the activity more than once?

3. To continue the activity ask:

   a. What are some of the living things which we find in a cemetery?
   b. Which ones would you enjoy studying?
   c. How can we study living things?
   d. Then what do you think that you will have to do in order to study some of these things?
   e. By knowing some of the methods of studying living things, how could we apply them to activities?

4. To expand the activity ask:

   a. What are you going to do when you have the results of the six activities? How can you make this information more meaningful?
   b. Would it be possible to investigate this information through the use of the library in order to make some deductions from our list of results?
   c. Could charts, graphs, drawings, samples be meaningful to your activities?

5. To evaluate the activity ask

   a. From which activity did you learn the most? Why?
   b. Which activity required the most amount of work? Explain.
   c. Which activity required the least amount of work? Explain.

III. Equipment

1. Paper

2. Pencils

3. Other equipment would be dependent on the six activities decided upon by the students.

IV. Procedure

1. Split the students into two groups. The one group will form three math related activities to use in the cemetery; the other group makes up three science related activities.

2. Discuss whether or not they would be appropriate activities and make any needed adjustments.

3. Make a list of equipment that will be needed for the activities.

4. Do the six activities.

5. Fill out evaluation sheet.

6. Discuss results.

THIS SOUNDS LIKE A GOOD WAY TO MAXIMIZE STUDENT INPUT.

Categorizing Living and Non-Living Things

Introduction

The cemetery can be a goldmine for educational learning experiences. Even in their earliest school experiences, children are exposed to living and non-living things. By learning the similarities and differences, living and non-living things can be categorized. To begin the activity bring out two boxes, one with a frog in it and one with a rock in it. Show them to the class.

Questions

1. To lead to the activity ask

   a. What does the frog look like?
   b. What does the rock look like?

2. To initiate the activity ask

   a. Is the rock alive?
   b. Is the frog alive?
   c. How can you tell?

3. To continue the activity ask

   a. Does the rock or frog eat?
   b. Does the rock or frog move?
   c. Does the rock or frog breathe?
   d. Does the rock or frog have babies?

   (THESE QUESTIONS SHOULD APPLY TO THE OBJECTS FOUND IN THE CEMETERY.)

4. To expand the activity ask

   a. What other things eat, grow, move and have babies?
   b. Are fish living or non-living?
   c. What about plants?
   d. Do plants breathe, eat?

5. To evaluate the activity ask

   a. How can we then tell the difference between a living and a non-living thing?

Equipment

1. Two boxes
2. One frog
3. One rock
4. Paper and pencils for making lists of living and non-living things

Procedure

1. After learning to categorize living and non-living things a trip to the cemetery is made to collect living and non-living things. Many objects, insects, etc. may be brought back to the room to be displayed.

YOU MIGHT NEED ANOTHER CATEGORY FOR THINGS THAT <u>WERE</u> ALIVE, SUCH AS STICKS, BONES, OR FEATHERS.

Wildlife in the Cemetery

Introduction

This investigation deals with wildlife that is found in a cemetery. The children will go to a cemetery, then they will take pictures of the various types of wildlife. (Awareness level - primary phy. handicapped).

Questions

1. To lead the activity, ask:

   a. What animals do you think you'd find in the cemetery?
   b. What would they eat?
   c. Could they exist only in the cemetery?

2. To initiate the activity, ask:

   a. Could you list animals you think you would find the most of?
   b. What do you think the animals might drink?

3. To continue the activity, ask:

   a. Can you think of any way to group or categorize the wildlife?

4. To expand the activity, ask:

   a. What things in the cemetery provide food for the wildlife?
   b. What type of problems might the wildlife face?

5. To evaluate the activity, ask:

   a. How extensive was the investigation?
   b. Was it on grade level?
   c. What activities did the students pursue?

Equipment

1. Camera for each child
2. One roll of film for each child
3. Paper
4. Pencils

Procedure

1. Have each student make a list of what wildlife they think they would find.

2. Have students go into cemetery and "eyeball".

3. Next allow students to take pictures of the wildlife.

4. Go back and compare the intital lists of animals to what animals they actually did find (and did take pictures of).

5. Design bulletin board using the lists and pictures.

6. Evaluate materials.

ONE PROBLEM WITH PHOTOGRAPHING ANIMALS IS THAT THEY ARE USUALLY TOO SMALL, TOO FAST, OR TOO FAR AWAY. WHAT TO YOUR EYES IS A SIZEABLE BIRD TURNS OUT TO BE A DOT ON YOUR PRINT.

WATER:.....

Water Usage

I. Introduction

This activity is designed for use with primary physically handicapped.

Water is something that we take for granted in our society. This investigation is a listing by the students of all the uses they find for water in school and at home - and drawing a picture of each.

II. Questions

1. To lead to the activity, ask:

   a. What is water?
   b. Is water important to us?
   c. Do you use water?

2. To initiate the activity, ask:

   a. Do we have any water problems?
   b. Can you think of a problem that has to do with water?

3. To continue the activity, ask:

   a. What do these people do with water?

      1. your parents
      2. swim teacher
      3. you
      4. a farmer
      5. car wash man
      6. sewage man

   b. Do these people use water wisely?

4. To expand the activity ask:

   a. Does everyone use water wisely?
   b. Role play - how student might use water wisely, unwisely.
   c. What might happen if no one cared about how water was used?

5. To evaluate the activity ask:

   a. How extensive was the investigation?
   b. Was it at grade level?
   c. What were the follow-up activities?

III. Equipment

1. Students' eyes - "eyeballing"
2. Paper
3. Writing implements
4. Crayons or paints

IV. Procedure

1. Have students walk (or ride in wheelchairs) in pairs around the school.
2. Have students list all the uses they found for water in school - then at home.
3. Have the children draw a picture to show water usage.
4. Allow students to develop their own scale to show if the water usage was good or bad.
5. Have students role play good and bad water usage.
6. Allow students to show and talk about their work.
7. Evaluate materials received.

GOOD

Water Conservation-Storage

Introduction:

A compound that is all around us - sometimes too much, sometimes too little - is water. All living things need water to survive. The earth is almost 3/4 covered in water. It is in the oceans, lakes, rivers, and streams. We will see problems facing us in the usage and storage of water.

Questions:

1. To lead to the activity ask:

   a. Can you name one more place where we might find water?
   b. Can we drink all kinds of water?
   c. What are some kinds we can't use?

2. To initiate the activity ask:

   a. How do we as humans use water?
   b. Where do we get our water from? A lake, river, water tank, well, or some other place?
   c. What is done to water to make it safe to drink?
   d. Why is it necessary to purify water before it is safe for people to use?

3. To continue the activity ask:

   a. How does water get to your home?
   b. What are some of the ways you could conserve water?
   c. Why must people use water supplies wisely?

4. To expand the activity ask:

   a. Is there a problem of pollution of water where you live?
   b. What are some causes of water pollution?
   c. Do we in our community have adequate supply of water?
   d. Are there any industries that use up great amounts of water?

5. To evaluate the activity ask:

   a. Is this an important aspect of community concern?
   b. What were conclusions of the various tests?

c. Were the topics pursued at home?

Equipment:

1. Pot and stove for purifying water.
2. Jars for storage of water - one with lid
3. Paper and pencils
4. Data bank

Procedure:

1. Have the students discuss questions in detail.
2. Discuss the amount of water available in the area and how the supply may be protected and preserved for the future.
3. Experiment with evaporation of water in jars; purification of water (polluted, salt, dirty).

   WHAT IS MEANT BY PURIFICATION: STERILIZATION, DISTILLATION, FILTRATION, DEIONIZATION?

4. Evaluate data.

Water Pollution

I. Introduction

This activity is to show severe and trainable retarded children how water can become "unfit" to look at, swim in, smell and drink. Preceeding this lesson, the teacher tells a flannel board story about a little boy and girl who have a picnic in the woods by a pond, and as they leave, throw their trash in the water. After the children discover that throwing trash in water is wrong, this lesson shows why.* Take about six paper cups and fill them about three quarters full. Then in each cup, in front of the children, place a different kind of substance; cigarette butts, oil, vinegar, paper, etc. Have the children look at, feel, smell what is in each cup.**

* CAN YOU USE THIS TO DEVELOP YOUR QUESTIONS TO LEAD TO AND TO INITIATE?

** QUESTIONS TO CONTINUE APPLY HERE.

II. Questions

1. To lead to the activity ask: BETTER PLACED IN CONTINUE SECTION

   a. What is inside the first cup; second cup; third cup..?
   b. What does the water in the cup with the vinegar look like? Smell like?
   c. What does the water with the oil in it look like? Feel like? Smell like?

2. To initiate the activity ask: BETTER IN CONTINUE SECTION

   a. Does the water in the cups look nice to you?
   b. Would you like to swim in it?
   c. Would you like to drink it?

3. To continue the activity ask:

   a. If you were a fish, would you like to live in this water?
   b. If you were a cow or dog or horse, would you like to drink it?

4. To expand the activity, ask: GOOD

   a. What do you think the creek outside would look like if, when we had a picnic, we threw all of our trash in the water?

b. What would happen if everyone threw their trash in the creeks around them?
c. What would it look like?
d. What might happen to the fish that live there?
e. What might happen to the animals who drink the water?

5. To evaluate the activity ask:

a. Why shouldn't we throw trash in the water?
b. Where should people throw their trash?

III. Equipment

1. Paper cups
2. Water
3. Oil, vinegar, cigarette butts, torn papers, anything else.

IV. Procedure

1. Teach lesson as described in introduction. Ask questions as listed.

THE DETAIL OF YOUR INTRODUCTION COULD WELL FIT HERE.

Water, Water Everywhere

I. Introduction

This activity would be planned for an older class of trainable retarded children. I would present the lesson with the idea that water can be found everywhere and at times we take this for granted. I would discuss the various ways that we use water at school, home, and during the various times of the year.

II. Questions

1. To lead to the activity:

   a. Where does water come from?
   b. Name certain uses of water.
   c. Can we find fresh water around our school?
   d. Can we find streams, ponds or lakes around your home?

2. Initiate activity:

   a. After the class has had a chance to relate their personal experiences and locate the stream and the pond at school, we would gather our equipment and go to the stream. SHOULD BE INCLUDED IN PROCEDURE
   b. Where does the water come from?
   c. Is it clean or dirty?
   d. Do you see any sign in or near the water?
   e. Discuss various answers.

3. Continue activity:

   a. Stream study

      *(1) List all animals that can be seen.
      *(2) Discuss these animals and are they important.
      *(3) How can we keep this stream clean?
      *(4) What could cause this to become dirty or unsafe?
      *(5) Take air and water temperature and I would chart these.

4. Expand activity:

   *a. To progress down the stream to the pond and compare questions in part 3, deal with the same questions.

* = SHOULD BE QUESTIONS.

SAMPLES (a. ARE ALL BODIES OF WATER ALIKE?
(b. ARE THERE PLACES NEAR-BY THAT WE COULD COMPARE?

5. Evaluation

a. Was it geared to the level of the students?
b. Were they enthusiastic?
c. Did it keep their interest?

III. Equipment

1. Paper and pencil for recording data.
2. Thermometer.
3. Glass jars to collect samples if needed.
4. Film strip, if an interesting one is found.

IV. Procedure

a. Show film strip if available.
b. Classroom discussion on what we are going to do outside.
c. After starting to list various observations, have the class keep their own records.

SOIL.....

Do You Swim Like A Rock?

I. Introduction

This activity is designed to provide awareness of soil action in a stream. The activity may best be done individually but with emotionally disturbed/socially maladjusted children, supervision of outdoor water activity is advisable. Therefore, practically, this may well be a group activity. The activity may take one hour from classroom exit to return. This activity may be suitable for grade levels three-upwards.

II. Questions

1. To lead to activity:

   a. Does the soil contain different substances?
   b. What substances does soil contain?

2. To initiate activity:

   a. Do all the substances going through water settle in the same place?
   b. Do you know what substances settle first?

3. To continue the activity:

   a. Have you ever watched soil settle into water in a stream?
   b. Do you remember what happened and what kind of soil?

4. To evaluate activity:

   a. How would the soil settle in other receptacles of water? Your sink? The pond?

III. Equipment

1. Collection of small gravel.
2. Collection of coarse sand.
3. Collection of topsoil.
4. Glass jars.

IV. Procedure

1. You will have to travel to a stream if possible and hopefully readily accessible.
2. Dip a glass jar into the stream and fill with water.
3. Add a mixture of gravel, sand, and topsoil to the water.

4. Observe what substance settles first, second, etc.
5. Record the results of Procedure 4.
6. Try this activity at the pond and compare your results between pond and stream.

HOW DOES THIS ACTIVITY SUGGEST NEW DIRECTIONS, OR LEAD TO FURTHER ACTIVITIES?

Erosion

I. Introduction

This lesson is geared to low functioning physically handicapped children to show how erosion is caused and how it can be prevented. A previous activity was given to inform the children just what erosion is. Dirt was spread on a cookie sheet. Each child got to blow on the loose dirt and some landed on a newspaper spread underneath. Then water was poured on the dirt and a gully was formed as some dirt and water was washed to the newspaper underneath.

II. Questions

1. To lead to the activity, ask:

   a. What happened to the dirt when we blew on it?
   b. What happened to the dirt when we poured water on it?

2. To initiate the activity, ask:

   a. Why do you think our blowing on the dirt made some of it go to the newspaper?
   b. Was there anything to hold it back?
   c. Why do you think pouring the water on the dirt made some of it go to the newspaper?
   d. What did the dirt left on the cookie sheet look like?

3. To continue the activity, ask:

   a. When you think about the weather outside, what could our blowing be?
   b. When you think about the weather outside, what could the pouring water be?

4. To expand the activity, ask:

   a. What do you think would happen to this sheet of dirt if we put it outside on a windy day?
   b. What do you think would happen to this sheet of dirt if we put it outside on a rainy day?
   c. Do you think the same can happen to the ground outside on a windy or a rainy day?

5. To evaluate the activity ask:

   a. Why does some dirt get blown away by wind and washed away by rain?
   b. What can keep the dirt from blowing & washing away?
   c. Do you think you would see erosion where there is a lot of grass, plants, and trees?
   d. What can we do to help keep erosion from happening?

III. Equipment

1. 2 Cookie sheets
2. Dirt
3. Water
4. Newspaper

IV. Procedure

1. Place one cookie sheet outside on a windy day and the other outside on a rainy day. Bring them in to observe and compare.
2. Take a walk on the school grounds to locate where erosion has taken place.

COULD YOU HAVE A SECOND SET OF COOKIE SHEETS WITH SODDED DIRT TO SHOW THE STABILIZING EFFECT OF GRASS ROOTS?

Types of Soils

I. Introduction

This activity is designed at the awareness level for primary physically handicapped.

This is an investigation into how various types of soils look physcially. It will involve the students in obtaining soil samples, and then writing down their characteristics.

II. Questions

1. To lead to the activity, ask:

   a. What is soil?
   b. What does it look like?
   c. Where do we find it?

2. To initiate the activity, ask:

   a. What characteristics does soil have?
   b. How do we collect soil?
   c. What tools might you use?

3. To continue the activity ask:

   a. Where could you look for different types of soil?
   b. How could soils differ; (in what ways)?

4. To expand the activity, ask:

   a. Why should we examine soils?
   b. Is there different quality of soils?

5. To evaluate the activity, ask:

   a. How extensive was it?
   b. Was it on grade level?
   c. What activities did the students pursue?

III. Equipment

1. Paper
2. Pencil
3. Small plastic containers (5 per student)

IV. Procedure

1. Discuss soil in Class (II-1, and II-2)

2. Have students collect at least 5 soil samples.
3. Have students write down the characteristics of each sample.
4. Compare the various characteristics.
5. Have class discuss results.
6. Have film on soil.
7. Evaluate all materials.

THE SOIL CHARACTERISTICS YOU ARE LOOKING FOR COULD USE MORE DEVELOPMENT IN THE QUESTIONING SECTION. ARE YOU INTERESTED IN COLOR, TEXTURE, PARTICLE SIZE, CHEMISTRY, ORGANIC CONTENT, MACRO-INVERTEBRATE LIFE, ETC.?

AIR.....

Air Pollution As Caused By Burning Leaves

I. Introduction

In dealing with a class of severely and trainable retarded children, the word "pollution" would have little or no meaning but the concept could be gotten across by using an example that the children may have seen at their own homes or neighborhoods. To introduce the concept of air pollution, a puppet show is told and manipulated by the teacher. Where a man is burning leaves in a pile in his front yard and a little girl walks up to watch. As she is watching she begins to cough and her eyes start to water. She steps back and looks up to see a birds nest directly overhead in a tree. As the smoke billows up, the mother bird flies away leaving her babies chirping. Later the little girl goes home wondering about what had happened. Next the following questions (if appropriate) could be asked by the little girl when talking to her mother and the teacher could direct them to the class for an answer.

II. Questions

1. To lead to the activity, ask:

   a. What happened when the little girl stood too close to the smoke?
   b. What did the mother bird do when the smoke went up into the tree?

2. To initiate the activity, ask:

   a. Why did the smoke hurt her eyes and make her cough?
   b. Why did the mother bird fly away?

3. To continue the activity, ask:

   a. What do you think happened to the babies left in the nest?
   b. What if the birds and animals could not get away from the smoke?
   c. What if people in your town burned leaves all of the time?

4. To expand the activity, ask:

   a. What would the sky look like if people burned leaves all of the time?
   b. What could happen if the wind blew while the leaves were burning?

5. To evaluate the activity ask:

    a. Do people have to burn leaves?
    b. How else can people in the neighborhood get rid of leaves if they do not want them?

III. Equipment

1. Puppet stage
2. Two puppets - man and girl
3. Stage props - tree, nest, birds, paper, pile of leaves.

IV. Procedure

1. Give puppet show as explained in introduction and follow up with questions.

WOULD QUESTIONS BEFORE THE PUPPET SHOW START THE KIDS THINKING IN THE RIGHT DIRECTION? ANSWERS WOULDN'T BE NECESSARY UNTIL LATER IN THE SHOW. COULD YOU RUN THE SHOW IN THE FALL, THEN TAKE A WALK TO AN AREA WHERE PEOPLE WERE ACTUALLY BURNING LEAVES?

Air

The group that I would present this activity on air would be an older trainable mentally retarded class, functioning around the second or third grade. I would have to start with level I, the awareness level.

I. Introduction

I would ask the questions:What is air? Can you give me another name? How can we feel it? Then show a film strip on the various ideas of air. Here I would probably have to explain various points of the film because you have to deal totally with the concrete ideas. We could then go outside to see various affects of the air. Ask:What we find in the air? The questions raised so far would fall into: (a) observing what air affects,(b) we could categorize what effect a strong air would have on the students' surrounding ie:destruction, weather (what it brings), change in temperature, what kind of air found in all four seasons, (c) compare types of air, (strength, direction, temperature) for one week, (d) measure with equipment made in classroom such as wind vane (paper, cloth, stick, glue, tack, stake).

At the end of the week, we could question the results:

a. What kind of air in seasons?
b. What strength does it have?
c. How does it help us?
d. How does it harm us?
e. Can we see it, hear it, taste it, feel it, smell it?

From this point, with this type of child, you could continue in any area that was mentioned in the preceding sections.

PLEASE FOLLOW STANDARD FORMAT. INTRO; QUESTIONS-LEAD TO, INITIATE, CONTINUE, EXPAND, EVALUATE; EQUIPMENT: PROCEDURE.

MUCH OF WHAT YOU'VE WRITTEN WOULD FIT WELL IN THE PROCEDURE SECTION. YOUR QUESTIONS SHOULD BE ORGANIZED UNDER THE APPROPRIATE TOPICS.

Punch And Scotch Or Particulate Awareness

I. Introduction

This activity is designed to provide background and awareness of particulates in the air, and the fact that air just does not "hang in there". This activity can be done by third grade students independently without teacher faciliation and may be suitable as a learning station activity. The time required would be half hour one day and half hour next day or some time at beginning and end of day.

II. Questions

1. To lead to activity:

   a. Have you seen little pieces of matter in the air?
   b. How big are, and how would you describe, things you have seen in the air?

2. To initiate activity:

   a. Do you think it is possible that there are things in the air you have not seen?
   b. Are you aware of the quantity of things in the air?

3. To continue activity:

   a. Do you think that some things fall in different places?

4. To evaluate activity:

   a. Do you think there are other locations that would be interesting to study air particulates? What areas?

III. Equipment

1. 3"x5" file cards.
2. Hole puncher.
3. Transparent tape.
4. Masking tape.
5. Magnifier.

IV. Procedure

1. You will need to punch a hole in at least two 3"x5" file cards.
2. Cover the holes with transparent tape.
3. Fold card over sticky holes so they will not get dirty before placement.
4. Attach your cards in locations that are very different from each other. The sticky hole should face upward so as to catch any falling things or particulates.
5. After your time interval, collect your cards. Label the cards where they come from.
6. Look at the sticky holes under a magnifier.
7. Record differences between sticky holes.
8. Compare your cards with other people's cards.

A ONE-DAY TIME INTERVAL MAY BE INSUFFICIENT IN SOME AREAS. YOU MAY NEED A WEEK OR MORE.

YOU NEED SOME "QUESTIONS TO EXPAND THE ACTIVITY".

Dirty Snow

I. Introduction

Snow is reported to be an excellent vehicle for studying water pollution. This activity if initiated after a snowfall may dramatically increase one's awareness and observation of pollutant building. The activity could be adapted for almost all elementary groupings.

II. Questions

1. To lead:

   a. After snow has fallen and been around for a while, what are some things you have seen in the snow?
   b. What have you seen around your home?
   c. What have you seen in other places and where have you seen them?

2. To initiate:

   a. Are there places where you saw nothing at all? Where?

3. To continue:

   a. Are there any places at or near the school that have very little snow pollution? Where?
   b. Are there any places at or near the school that have a lot of snow pollution? Where?

4. To expand:

   a. What do you think we will find in polluted snow?

5. To evaluate:

   a. Describe any pollutants and what they might do in a snow sample?

III. Equipment

Glasses and jars are needed. Markers and snow are also needed.

IV. Procedure

1. Two days or so after a snowfall, the children should sample by filling receptacles with snow, taking care

that they gather snow containing pollutants and snow apparently without pollutants.

2. The jars should be numbered and placed in the classroom.
3. Each day, possible new samplings could be done of snow, numbered and placed in the classroom.
4. Observations of the various samples, should be recorded, when the snow has melted.

COULD THEY ALSO BRING SAMPLES FROM HOME, FROM A SHOPPING CENTER, FROM AN INDUSTRIAL AREA, FROM A FARM, ETC? FROM A FIRE PLUG?

NOISE.....

School Noises

I. Introduction

Noise is a problem in our school. Through everyday, we hear a large variety of sounds. This activity is done for primary physically handicapped at the awareness level.

The classes will be divided into 4 groups to record on tape, the sounds (noises) from: #1 office, #2 cafeteria, #3 hall, #4 classroom.

II. Questions

1. To lead to the activity, ask:

   a. Can you hear noises?
   b. How many types of noises are there?
   c. Is noise good?

2. To initiate the activity, ask:

   a. What are examples of school noises?
   b. Are there ways to record noises?
   c. How could we study noises?

3. To continue the activity, ask:

   a. (out of doors) Who can tell me 3 noises that they heard?
   b. Were they pleasant noises?
   c. Can the type of noises you make be connected with your duty or job?

4. To expand the activity, ask:

   a. How should you "be" or "act" while recording?
   b. Why should you be that way?

5. To evaluate the activity, ask:

   a. How extensive was it?
   b. Was the activity appropriate?
   c. What activities did the students do?

III. Equipment

1. Paper
2. Pencil
3. Tape recorder
4. Tape (1 per group)

IV. Procedure

1. Have students listen to noises outside.
2. Divide students into 4 groups.
3. Have students record sounds in their area.
4. Return to class and play each tape to see if class can identify where the noises came from.
5. Evaluate procedures and materials.

YOUR EXPANSION QUESTIONS WOULD MORE APPROPRIATELY BE QUESTIONS TO CONTINUE. COULD A FOLLOW-UP ACTIVITY BE FOR EACH GROUP TO RECORD NOISES IN ONE OF THE OTHER 3 AREAS TO TRY TO PICK UP SOUNDS THE PREVIOUS GROUP HAD MISSED? OR COULD THE STUDENTS, FOR HOMEWORK, LIST SOUNDS AT HOME,AT THE GROCERY, AT A SHOPPING CENTER, IN A CAR, ETC.?

Noise Pollution

I. Introduction

Noise is different in different areas of our country. Some places have a higher degree of noise than others. In this lesson, geared to low functioning physically handicapped children, is to expose these children to various noise levels as found: 1) just outside the school, 2) at a small county airport, 3) at a construction site, and 4) on Rt. 30 highway.

II. Questions

1. To lead to the activity ask:

   a. What is noise?
   b. Do you like noise?
   c. Can you hear noise?

2. To initiate the activity ask:

   a. Is this a noise? (slam table with hand)
   b. Is this a noise? (talk normally)
   c. How could talking become a noise?

3. To continue the activity ask:

   a. Who can think of a noisy place in our school?
   b. Who can think of a noisy place outside of school?
   c. Who can think of a noisy place anywhere in the county?

4. To expand the activity ask:

   a. Do you think an airport would be noisy?
   b. Would you like to live near an airport? Why? Why not?
   c. Do you think a construction site is noisy?
   d. Would you like to ride construction equipment for a steady job?
   e. Do you think a pond and woods are noisy?
   f. Would you like to live nearby?

5. To evaluate the activity ask:

   a. What can we do about noise?
   b. What can a construction worker do about noise?
   c. What can the airports do?

III. Equipment

1. Paper and pencils.

IV. Procedure

1. Two small field trips are planned, one to a county airport and one to a construction site; also, a walk down to the pond and woods outside school, and a walk to the school entrance at Rt. 30. At each place, noises are recorded by writing them down. Later, places visited can be discussed.

YOU NEED SOME ADDITIONAL QUESTIONS TO SUGGEST FURTHER WORK. THIS FORMAT WAS DEVISED NOT SO MUCH TO PRESENT SINGLE ISOLATED ACTIVITIES, BUT RATHER TO STIMULATE STUDENT INTEREST TO THE POINT WHERE THEY ARE ASKING FOR ADDITIONAL STUDIES.

Noise

I. Introduction

An activity on noise could be started in the classroom. I would choose noise that could be found around the school. This investigation would deal with noise that could be harmful, noise around the school,and finally,in our environment.

II. Questions

A. Lead to activity:

1. How are various types of noise produced?
2. How does noise hurt our surroundings?
3. Is there a better way to live with noise?

B. Initiate activity:

1. Why is noise a problem?
2. How can we list these various types of noise and in what catagories can they be placed?
3. Why should we try to stop unwanted noise?

C. Continue the activity:

1. What means of transportation are available to us?
   a. around school.
   b. near our homes.
   c. in urban and rural communities.
2. What types are helpful and harmful?

D. Expand the activity:

1. The transportation that is harmful may also be needed in our lives.
2. This part of the activity could lead to writing to try to solve this problem.

E. Evaluation of activity:

1. How interested was the class?
2. How effective were the lists that were comprised?
3. In what activities did the students show the most interest?

III. Equipment

A. Paper to record data.
B. If possible, a tape recorder to record various types of noise.
C. If possible, a meter to measure noise intensity.

IV. Procedure

A. Have the various groups in the class choose and study noise that would be found around the school.
B. Have the groups put the noises into preselected activities.
C. If possible, have the groups record the various types of sound on tape.
D. The class could make a game by trying to identify the various sounds that the group recorded.

THE TRANSITION TO THE SECTION ON TRANSPORTATION NOISE WAS TOO ABRUPT. YOU NEED A FEW MORE QUESTIONS IN THAT AREA.

MISCELLANEOUS ACTIVITIES.....

Environmental Studies: Transportation

I. Introduction

This activity is designed at the awareness level for use with primary grade physically handicapped children.

In this activity, the child is asked to keep a scrapbook and a gas record page. For the scrapbook, the child is asked to cut out pictures that demonstrate various types of transportation. The scrapbook is to be divided into 2 sections: Section I - Gas-using vehicles. Section II - Non-gas-using vehicles or means of transportation. Also, a record page will be used to keep track of gas used for means of transportation at their home.

II. Questions

1. To lead to the activity ask:

   a. What is transportation?
   b. Do you ever use any type of transportation?
   c. Can you think of types of transportation in your town?

2. To initiate the activity ask:

   a. Does transportation help you?
   b. What problems do means of transportation lead to?
   c. If there are problems, who has to help "cure" the problem?

3. To continue the activity ask:

   a. How are these people connected with transportation?
      (1) gas station man
      (2) policeman
      (3) engineer
      (4) bicycle repairman

4. To expand the activity ask:

   a. How can transportation be made to be less of a problem to our community?
   b. How can your family help to use less gas?
   c. Compare various means of transportation. SHOULD BE A QUESTION

5. To evaluate the activity ask:

   a. How extensive was the activity?
   b. Was the activity suitable to the grade/age level?
   c. What were the follow-up activities?

III. Equipment

1. Magazines
2. Scissors
3. Paste
4. Paper for scrapbook

IV. Procedure

1. Have students look thru magazines for various means of transportation.
2. Categorize into gas and non-gas means of transportation.
3. In scrapbook, keep record of gas-usage of each means of transportation that child has at home.
4. Have students review each others' notebooks.
5. Teacher should evaluate students' work.

GOOD ACTIVITY

Grass

I. Introduction

This activity is suggested to increase the childrens' awareness of the diversity of grass in their school environment. The activity is suitable for all ages.

II. Questions

1. To lead

   a. What can you tell us about grasses?
   b. What do they look like?
   c. What do they smell like?

2. To initiate:

   a. What about grasses makes them alike?
   b. What differences have you noticed?

3. To continue:

   a. What should we do to discover likes and differences of grasses?
   b. How (what ways) could we demonstrate likes and differences of grasses?

4. To expand:

   a. If we were to chart likenesses and differences, what topics or classifications could we use?
   b. What area should we investigate?
   c. Should we investigate two different areas and compare?
   d. Should we at a later time take an index to find out which grasses predominate?

5. To evaluate:

   a. How would you describe the grasses you saw?
   b. How were they alike and how different?

III. Equipment

Paper and pencils for recording observations are needed.

IV. Procedures

1. Select appropriate site(s) for grass observation.
2. Have children prepare chart for displaying likenesses and differences of grasses.

3. If possible, divide children into small groups to observe different areas (if available)

QUESTIONS TO EXPAND SHOULD SUGGEST NEW DIRECTIONS FOR FURTHER STUDIES (I.E. BARK ON TREES, SEEDS FROM WEEDS, INVERTEBRATE ANIMALS IN STREAMS).

Arithmetic And Planting Seeds

I. Introduction

Many subject areas can easily be taught in conjunction with environmental studies. This lesson is geared toward low-functioning physically handicapped children. It is to have the children count as well as plant seeds.

II. Questions

1. To lead to the activity, ask:

   a. Who knows how many children there are in this room?
   b. If everyone gets one milk carton, how many milk cartons do we need?

2. To initiate the activity, ask:

   a. With your measuring cups can each of you measure out one cup of dirt?
   b. Who knows how many holes we should make in the dirt to have only one plant?

3. To continue the activity, ask:

   a. Can each person count out two seeds to put into the hole?
   b. Does anyone know why we put two seeds in the hole even though we only want one plant?

4. To expand the activity, ask:

   a. We should water the seeds every two days. On what day will we water them again?
   b. The seeds should germinate in eight days. Can someone tell me what day that will be?

5. To evaluate the activity, ask:

   a. Why do you think we cover the seeds with dirt?
   b. When every plant grows, how many will we have?
   c. What will you do with your plant when it is ready to take home?

III. Equipment

1. 9 milk cartons, flower seeds, potting soil, measuring cups, water.

IV. Procedure

1. Pass out 9 milk cartons.
2. Have each child measure out 1 cup of dirt and place it in their carton.
3. Have each child poke 1 hole in their dirt.
4. Have each child count out 2 seeds and place them in the hole.
5. Cover with dirt, water, place on window sill.
6. Have children figure out watering dates.

GOOD, SIMPLE APPROACH

Succession

I. Introduction

Sometimes in one small area one can observe different organisms living under different conditions. An area offering such possibilities might be a fallen log. Observations of organisms thriving on the log under different conditions could be done by almost all ages or capability groupings.

II. Questions

1. To lead:

   a. What things have you seen growing side by side- but things which seem to have little in common?

2. To continue:

   a. What insects or animals have you seen thriving in close proximity but which require different living conditions?

3. To expand:

   a. What things have you seen growing on a log?
   b. What differences have you possibly seen in the log itself?

III. Mateials Needed

You will need to pre-locate a rotting log or other item which can be observed displaying the process of succession.

IV. Procedures

A trip or visit to your pre-located item would be taken and the children would be asked to note different organisms and their living conditions.

YOUR QUESTIONING NEEDS FURTHER DEVELOPMENT. YOU SEEM TO ASSUME QUITE EXTENSIVE BACKGROUND KNOWLEDGE ON THE PART OF THE STUDENT.

Tanglefoot Boards

I. Introduction

The children would undertake this activity in order to examine types of life in a particular area. Each child would have a board and would decide where he or she could place the board. They would be responsible for writing an explanation of what was observed on the board.

II. Questions

1. To lead the activity, ask:

   a. What could we do that would determine the number and type of life in a particular area?
   b. What would this involve doing?

2. To initiate the activity, ask:

   a. How could a board with flour or powder sprinkled on it tell us what type and amount of life we had in a particular area?
   b. What else could you tell from examining the board?

3. To continue the activity, ask:

   a. Would placement of the board in a particular spot influence your results?
   b. Could season of the year influence your results?
   c. Would weather conditions have a relationship to your results?

4. To expand the activity, ask:

   a. How long do you think it would be necessary to keep your board in its particular spot before examining it?
   b. If we did not get results after a day or two, what could you assume?
   c. What could you do to attract the life in that particular area?
   d. Would it be possible for some boards to have evidence of life while others do not even though they are in the same general area? Why?

5. To evaluate the activity, ask:

   a. How would writing the results of your study help

you? Your classmates?

b. Why is it important to investigate, not only your board, but that of your classmates?
c. What evidences of life did you find on your board?

III. Equipment

1. Board
2. Flour or Powder
3. Paper
4. Pencil

IV. Procedure

1. The student's will answer questions that will lead to the activity.
2. The students will choose a spot to place their boards.
3. The children will examine the results.
4. They will complete a written evaluation.
5. We will discuss the evaluations.

DETERMINING AN ACTUAL NUMBER OF ORGANISMS WOULD BE DIFFICULT WITH A TANGLEFOOT BOARD. AT BEST IT CAN GIVE YOU A QUALITATIVE ESTIMATE OF USE DENSITIES.

TRANSITIONAL LEVEL ACTIVITIES

TRANSITIONAL LEVEL ACTIVITIES

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PLAYGROUNDS.....

Playground Planning

I. Introduction

This activity is developed at the awareness level for primary physically handicapped. The project will be working with the playground that is adjacent to the school building at the Child Development Center.

II. Questions

A. To lead to the activity:

1. What things did you find in the playground?
2. Did you see any problems there?

B. To initiate the activity:

1. Name 2 things we might be able to do with the area?
2. What problems might we run into from the school?

C. To continue the activity:

1. What might be good to plant at the garden? (If you chose one?)
2. How could we secure things to buy?

D. To expand the activity, ask:

1. Are there special seasons for different plants and vegetables?
2. What is our soil like here?

E. To evaluate the activity, ask:

1. What would the cost of our materials be? (Student)
2. Could we contact people to secure help with this project? (Student)
3. Who? (Student)
4. Was activity on grade level? (Teacher)
5. What activities did the students do? (Teacher)

F. Equipment

1. Their eyes
2. Paper
3. Pencils

G. Procedure

1. Have student "eyeball" school.

2. Then "eyeball" playground area.
3. Have students map out what could be done with area.
4. Have students list plants they would need and possible costs.
5. Have students draft letters to gain support.

YOU SHOULD INCLUDE ADDITIONAL QUESTIONS TO COVER THE FULL RANGE OF SUGGESTIONS YOU MIGHT EXPECT. (WHY IS A SWIMMING POOL NOT POSSIBLE? WHAT ARE THE ADVANTAGES/DISADVANTAGES OF ANY PROPOSAL?)

Plane Table Mapping

I. Introduction

The children will undertake this project in order to gain an understanding of mapping an area. They will see that mapping an area can lead to fairly accurate results. The children will have the opportunity to help and be helped by members of their group. They will work in groups of four, with each person in the group responsible for some aspect of the activity.

II. Questions

1. To lead to the activity, ask:

   a. How do maps help us?
   b. What can we tell from a map?
   c. Why is measurement important in map-making?

2. To initiate the activity, ask:

   a. Who knows what a scale is when we are referring to a map?
   b. What can our measurement be expressed in?
   c. What are some things that we see included in some maps?
   d. How is a county map different from a state map?

3. To continue the activity, ask:

   a. Do you think that you could make a map of a part of our playground?
   b. What would you include in that map instead of mountains or rivers?
   c. Is there any other way to measure besides using yardstick or a tape measure?

4. To expand the activity, ask:

   a. What could you do to your map to make it look more like a piece of art work?
   b. How could you check to see whether or not your map is accurate?
   c. If it is not accurate, what could be some of the reasons for the inaccuracy?

5. To evaluate the activity, ask:

   a. Did you have any problems with the mapping? What?
   b. Did any member of your group provide you with information?

c. Was there anything that the group members did not agree on?
d. What was your important role in the mapping exercise?

III. Equipment

1. White paper
2. Tape
3. Pencil
4. Table
5. Measuring stick or tape measure
6. Markers for Point A and Point B

IV. Procedure

1. Introduce students to mapping through questions.
2. Divide students into groups of four.
3. Students complete maps.
4. One group checks map of another group.
5. Students take a written evaluation.
6. The class discusses the results.

GOOD ACTIVITY

Playground Litter

I. Introduction

Activity for 14-20 year old academic physically handicapped class. This is an investigation on causes and remedies of playground litter.

II. Questions

To lead the activity, ask:

a. What is playground litter?
b. What materials are considered litter?
c. Where do we find the litter?

To initiate the activity, ask:

a. Of what material is most litter made?
b. Why is there litter on the playground?

To continue the activity, ask:

a. Is litter dangerous?
b. What is the most dangerous?
c. Why is it dangerous?
d. Is litter attractive?

To expand the activity ask:

a. What could you do to prevent playground litter?
b. Are there playgrounds near you that have litter on it?
c. What area has the most litter?
d. What does the city do about playground litter?

To evaluate the activity, ask:

a. What were your conclusions about what most litter on the playground was made of?
b. Collect all other data and discuss results.

III. Equipment

1. Paper and pencils.

IV. Procedure

Have a discussion about playground litter. Go collect the data on the playground and pick up the litter.

WHAT ABOUT SOME QUESTIONS CONCERNING WHO, THE HUMAN DIMENSION OF LITTER?

Guess How Many

I. Introduction

This activity is at the awareness level for primary physically handicapped. The children will take a count of how many people are in a certain area around the school during a precensus and a postcensus.

II. Questions

1. To lead to the activity, ask:

   a. What area of the school is used most around the building?
   b. What is a count or census?

2. To initiate the activity, ask:

   a. After walking around the school, where do you think most people go?
   b. How could you keep track of a group of people?

3. To continue the activity, ask:

   a. What might be a good way to mark people?
   b. Are any methods of marking more beneficial than other methods?

4. To expand the activity ask:

   a. Can you give an estimate (or guess) of how many people come to the school each day?
   b. What other groups could you take a census of?

5. To evaluate the activity, ask:

   a. Was it on grade level?
   b. Was it motivating for the students?
   c. What type of activities were used?

III. Equipment

1. Paper
2. Pencil
3. A type of marking device (developed by students)
4. Counter

IV. Procedure

1. Have students take a census and postcensus (Peterson Population Estimation Formula)
2. Allow class to choose their own method of counting.
3. Evaluate materials.

OK

CEMETERIES.....

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Cemeteries - Dates

Introduction

We will be going to a cemetery to discuss and collect information about the birth & death dates on grave markers. Find the oldest person and the youngest person and give prizes to the person who found them.

Questions

1. To lead to the activity, ask:

   a. What do we do with people who die?
   b. Why do we put them in cemeteries?
   c. How can we tell who they are?

2. To initiate the activity, ask:

   a. What kinds of things are carried on tombstones?
   b. Can we tell how old people are when they die from their stone?
   c. How do we do that?

3. To continue the activity, ask:

   a. Are there any problems that might arise?
   b. Find out where your local cemeteries are.
   c. Find out how people get in the cemetery.
   d. Can we find an average age to which people live?

4. To expand the activity, ask:

   a. Did we find any stones that we couldn't read?
   b. Were there any stones that had no birth date?
   c. How could we tell how old the persons were if no birth date is inscribed?

5. To evaluate the activity, ask:

   a. Collect the data - Who was the youngest person found?
   b. Who was the oldest?
   c. What was the average age?
   d. Explain how you found the average. What could be a problem? Was this a good sample you picked? Accurate?
   e. What did you find out about the cemeteries in your area?

Equipment

1. Large paper for rubbings

2. Crayon - black

3. Tape

4. Paper and pencils for data

Procedure

1. Discuss the opening questions leading into the activity and problems in our work.

2. Go to the cemetery and do our activities including a rubbing as proof of the oldest and youngest.

3. Evaluate the data collected about cemeteries and average age.

4. Discuss more problems about the numbers of people in cemeteries now. (SHOULD HAVE A QUESTION IN THE EXPANSION SECTION TO COVER THIS.)

"For Everything There Is A Season"

I. Introduction

Since graphs and math skills may be considered pre-requisite skills to effective social and science studies, this activity was designed to give practice in graphing, using the cemetery as an interesting and perhaps exciting resource. The skills to be practiced in this activity could be done independently by fourth grade level and up students in a group field trip to a cemetery. The activity would probably be accomplished in an afternoon social studies-science block from 1-3 in the afternoon if that is how your curriculum is scheduled.

II. Questions

1. To lead to activity:

   a. What time of the year do people usually die? Why do you think so?
   b. What month of the year do you think has the greatest number of deaths? Next greatest number? Why?
   c. What month of the year do you think has the smallest number of deaths? Why? What month has the next smallest number? Why?
   d. What season has the greatest/smallest number of deaths? Why?

2. To initiate activity:

   a. What activities might you do, or sources investigate, which would provide data for a study to determine death months; death seasons?

3. To continue activity:

   a. Would a cemetery be a pleasant place to collect data on death months and seasons? Any advantages to a cemetery?
   b. What means would you use to record your data most effectively?

4. To evaluate activity:

   a. Would you consider collecting the above data from other sources to perhaps verify your study?
   b. What other statistics might you graph to tell a story this way?
   c. Are there other stories in the cemetery best reported on a bar graph?

III. Equipment

1. Paper, graph paper
2. Pencils

IV. Procedure

A. Graph I

1. Set up a bar graph with the months of the year sectioned off on the bottom line and numbers from 0 sectioned off and numbered on the vertical line.
2. Fill in fifty blocks indicating the month death occurred with information gathered from the tombstones. (Not all tombstones will indicate the month of death).
3. Name the most popular month, next most popular month, least popular month and next least popular month that death occurred.

B. Graph II

1. Set up a bar graph similarly with the bottom line sectioned into the four seasons with:
   Winter-Dec., Jan., Feb.
   Spring-Mar., Apr., May
   Summer-June, July, August
   Fall-Sept., Oct., Nov.
2. Fill in fifty blocks indicating appropriate season death occurred with information or data noted in your first graph.
3. Name the most popular, least popular season of the year death occurred.

Reference

1. Holy Bible - Philadelphia: Westminster Books. Ecclesiastes 3.

COULD THE STUDENTS COMPARE THEIR INDIVIDUALLY-COLLECTED DATA TO SEE IF THERE WERE ANY RANDOM VARIATIONS? MIGHT A COMPOSITE GRAPH BE MORE REVEALING? COULD COMPARISONS BE MADE TO OTHER CEMETERIES?

WILDLIFE.....

Investigation of Wildlife

Introduction

This activity would be designed for an older elementary class. We would choose a site probably around a stream that we had previously studied and compare the types of animal life on land and water.

Questions

1. Lead to activity

    a. What type of insect life could we find?
    b. Do they have a wide range of size and color?
    c. Are they common in our area?

2. To initiate activity

    a. Discuss, with use of pictures, the various animals that could be found.
    b. Could it happen that we would find no life at all, and why?
    c. How are the animals that live along the water actually controlled by the water?

3. Continue the activity

    a. What type or various categories could we find around the stream?

        1. insects
        2. cold blooded animals
        3. warm blooded animals
        4. birds

    b. How do they affect or help each other?

4. Expand activity

    a. How does each student see the benefit of each animal?
    b. To pick a stream, hopefully the one studied earlier, divide the class into various teams and investigate the questions raised in part II.

5. EVALUATE THE ACTIVITY

Equipment

1. Notebooks for recording

2. Jars for samples.

3. Magnifying glass

4. Camera, if possible

Procedure

1. Have students divide into groups, assign one member to record data.

2. When you arrive at stream, allow appropriate time for investigation.

3. Return to school or conduct class along stream to show and explain, and try to place into a category, the various types of wildlife that have been seen, observed, or captured in the jar.

Species Identification

I. Introduction

This transitional level activity uses the identifying process to determine what type of animals visit a prescribed area for food and shelter. The test period will run over a three week period for purposes of determining any change in population. The level of activity will be for the trainable secondary level.

II. Questions

1. Leading into activity:

   a. Where would the best site be to attract animals?
   b. Would site be best near water and/or direct source of food?
   c. How large an area should we have for collecting data?
   d. How are we going to identify animals that are found?
   e. When, during the day, would be the best time to start identifying?

2. Initiate the activity:

   a. Measure area to be used for identifying animals.
   b. Map area to be used topographically locating direction of east, west, north and south.
   c. Record any animal species that enter area by picture and notes.
   d. Record the weather conditions and time of day animal appeared.
   e. Did the animal use area for shelter or food or both?

3. Continue the activity:

   a. Group animal species into classes that were identified. (DIVERSITY APPROACH)
   b. What types of food were available in area that the animals feed upon?
   c. Describe the types of shelter that were used by species.
   d. Determine whether a certain area was used by certain animals.

e. When were the best conditions for what animal to seek food or shelter?

4. Expand the activity:

a. Estimate the time of day and what animals could possibly be observed feeding.
b. What animals used what areas for their own use?
c. What animals constructed the best shelter?
d. What foods are best for what animals determined by observation?
e. Identify the classes of animal species that used the area.

5. Evaluate the activity:

a. Chart the animals that entered the area-identifying time and locations.
b. Did this activity develop necessary levels of interest in the habits and types of animals in area?
c. Would there be a better site for observation?
d. Were the students able to differentiate types of animals?
e. How would this activity be adjusted for more severely handicapped students?

III. Equipment

1. Paper and Pencil and ruler
2. Camera
3. Chart board and color pencils.
4. Binoculars.

IV. Procedure

The best time would be determined to identify animals. Groups would be broken into recording and identifying members & rotated periodically. Other class activities would be centered around experiment.

"TYPES" MIGHT BE A BETTER TERM THAN "SPECIES". THE TERM SPECIES HAS A RATHER NARROW DEFINITION WHILE TYPE CAN BE TAKEN MORE LOSELY. A TYPE COULD INCLUDE SEVERAL SPECIES THAT LOOK ALIKE YET ARE TECHNICALLY DISTINCT.

Tally The Trees

I. Introduction

In order to engage in meaningful scientific happenings, it is important to have experience not only in observation but in data collection. In this activity, the children would have experience in keeping and recording a simple tally. The activity could be adapted to readers and non-readers as well. (This is of interest to me as I often have one non-reader and perhaps four, at the fourth grade level).

II. Questions

1. To lead:

   a. When you have visited a wooded area, were you aware of different kinds of trees?
   b. Were you aware of which trees were numerous and which were not? What is your recollection of our trips to the little pond area?

2. To initiate:

   a. What are some ways we could find out how many different trees are in a certain spot?

3. To continue:

   a. How could we take our trip and keep count at the same time?

4. To expand:

   a. What kind of a chart could we use to tally the trees?

5. To evaluate:

   a. How many different trees did we find?
   b. How many of each type did we find?

III. Equipment

Graphed paper and pencils are needed.

IV. Procedure

Construction of simple graphs indicating different trees and their quantity should be completed. Then, a trip to spot selected trees should be made so that the children may collect their data and tally it up.

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DEVELOPING THE CHART SEEMS TO BE OF PRIME IMPORTANCE HERE. TRY BEEFING UP YOUR QUESTIONS TO DEVELOP THE GRAPHING CONCEPT.

MISCELLANEOUS ACTIVITIES.....

The Effect Of Sulfur Dioxide On The Pinto Bean

I. Introduction

The class will plant pinto beans in order to conduct qualitative air pollution analysis. The students will place some of the plants outside of the school facing Route 30. Twelve of the plants will be kept indoors (control group). After fourteen days the students will examine the plants. They will record and discuss the results. We will then place six of the indoors plants in a separate room in which we will burn sulfur dioxide. The sulfur dioxide would be burned* every day until a change had been noted in the plants. When a change has been noted we would begin to remove a plant a day. We would place the affected plant with the control group. We would continue to burn the sulfur dioxide in the room with the affected plants until just one plant remained. All of the affected plants would be tagged with the number of times that they were exposed to the sulfur dioxide. Thereby, the students will be able to make some judgment as to whether sulfur dioxide and its quantity affect the pinto bean.

II. Questions

1. To lead to the activity, ask:

   a. What sort of an effect do you suppose certain chemicals have on some plants?
   b. How could you tell?
   c. How could we conduct an experiment to test this hypothesis?

2. To initiate the activity, ask:

   a. Why are we placing some of the plants outdoors and some inside?
   b. What are the indoors plants acting as?
   c. Why is that necessary?

3. To continue the activity, ask:

   a. Can any difference be noted between the plants indoors and the ones outside?
   b. What are the differences?
   c. Can any differences be noted between the plants in our room and the plants in the room with the burning sulfur dioxide?
   d. Can any differences be noted in the plants that were exposed to sulfur dioxide for a longer period of time over the plants that were not exposed as long?

4. To expand the activity, ask:

   a. How can we further test the effect of sulfur dioxide on plants in our community?
   b. What can we do and what are you going to do if the results are not favorable?

5. To evaluate the activity, ask:

   a. What were the written observations before discussion?
   b. Were they able to understand the results of the experiment through a written explanation before discussion?
   c. Were the students interested enough to follow through with their suggestions?

III. Equipment

1. Twenty-four cardboard boxes
2. Soil
3. Pinto beans
4. Sulfur dioxide

IV. Procedure MUCH OF THE INTRODUCTION SHOULD BE PLACED HERE

1. After the experiment has been sufficiently discussed appoint a committee to post the results on a bulletin board.
2. Appoint an Action News Team of interested students to collect data from their environment.
3. Direct a group of students to follow through with the collected data.

* SO_2 IS A PRODUCT OF BURNING SULFUR, OR A BY PRODUCT OF BURNING OTHER MATERIALS WITH SULFUR IMPURITIES.

Dealing With Transportation Pollution

I. Introduction

Pollution from cars, trucks, buses, trains, etc. is a definite hazard to the well being of human growth as well as vegetation growth. This activity raises the questions as to what might cause this pollution and what might be done about it. Also we might find out what is currently being done about the pollution from transportation.

II. Questions

1. To lead to the activity, ask:

   a. What do you see coming from a diesel engine's exhaust pipe?
   b. What happens when you are behind a bus in the city?
   c. Have you ever been behind a car billowing blue smoke?

2. To initiate the activity, ask:

   a. Is there really a problem of pollution from transportation?
   b. Who is to blame?
   c. Can this affect your health?
   d. Can we get away from it? Why or why not?

3. To continue the activity, ask:

   a. What can we do about the problem of transportation in our community?
   b. Are there any regulations to which we can look for help?
   c. What about public transportation as a remedy?
   d. Is this also a problem?

4. To expand the activity, ask:

   a. How might we test for air pollution from transportation?
   b. Would you expect to find dirt in the exhaust of cars, buses, trucks, etc? Can we test it?

5. To evaluate the activity ask:

   a. Did we complete our job in the investigation?

b. Were the letters effective enough to get a reply?
c. What were your conclusions from the data?
d. Did you pursue your experiments at home?

III. Equipment

1. Vaseline) USE OF THIS EQUIPMENT NOT CLEAR
2. Filter paper) IN PROCEDURE
3. Writing paper and postage
4. Suggestion box for data received.

IV. Procedure

1. Have the students discuss the forgoing topic questions.
2. Pick out the appropriate address for the state inspections of vehicles and obtain replies POINT OF THE LETTERS IS NOT CLEAR
3. Talk about the replies.
4. Evaluate all materials from experiments and replies.
5. Is this state doing enough?- paper to be handed in.

YOU MIGHT CONSIDER THE LETTER WRITING AND FILTERING AS SEPARATE ACTIVITIES.

EYE BALL

Introduction

The purpose of this activity is to make the child aware that through observation we can obtain much valuable and useful information. The students will be taken to the stream at Kerr Park in Downingtown. Previous to this activity the children would have had experience "eye balling" in the classroom, on a walk around the schoolyard, and a short walk near the school. Each time the students would have to record their results and a discussion would follow.

Questions

1. To lead to the activity, ask:

   a. What are some of the things you might expect to see through "eye balling" the stream?
   b. Would you expect to find these same things if you returned at a later hour in the day?

2. To initiate the activity, ask:

   a. What might be some other influencing factors of what we find in the stream?
   b. Do we have control over some of these things?

3. To continue the activity, ask:

   a. Would weather be an influencing factor for the stream?
   b. Would the season of the year make a difference as to what we would find in and surrounding the stream?
   c. Do you think that the stream's surroundings might have a connection to what you are observing in the stream?
   d. Would the presence of animals influence what you see in and around the stream?

4. To expand the activity, ask:

   a. Now that we have discussed what we have observed, who would have a suggestion for an activity? How can we make use of our gathered information?
   b. What are some ways that we could find answers to some of the questions that we have discussed such as: Does time of day influence what we see in and around the stream?

5. To evaluate the activity,ask:

   a. What did you enjoy the most about"eye balling"the stream?
   b. What did you enjoy the least about"eye balling"the stream?
   c. Did you discover anything new from"eye balling"that you did not ever see or know about before?
   d. Did"eye balling"the stream present you with something that you would like to find out more about?

Equipment

1. Paper

2. Pencil

Procedure

1. Questioning period in classroom with speculations recorded.

2. Students observe the stream and record.

3. Students discuss observations.

4. Students attempt to make use of observations through added activities.

GOOD

OPERATIONAL LEVEL ACTIVITIES

OPERATIONAL LEVEL ACTIVITIES

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Site Development

I. Introduction

The children will take a walk around the school grounds. They will see what there is to work with and what can be done on the site. The main idea is to have the class identify and become involved with ideas related to the site. The class will be responsible for the ideas and organization of development based on their interests.

II. Questions

1. To lead the activity, ask:

   a. What did you notice surrounding the school?
   b. How could we develop some of these things into workable projects?

2. To initiate the activity, ask:

   a. How could we divide our class for our site development?
   b. What could be an activity that would add beauty to our surroundings?
   c. What could be an improvement project?
   d. What could be an addition project?

3. To continue the activity, ask:

   a. What must we do before we actually begin a specific project?
   b. Are we allowed to change or develop land that does not truly belong to us?
   c. Could you involve other people besides just our class?
   d. What would be the benefits of including other people to join our site development project?

4. To expand the activity, ask:

   a. How could we arrive at a fair decision as to which project we should begin first?
   b. What should influence our decision?
   c. Now that we decided our first project, what type of equipment will we need?

5. To evaluate the activity, ask:

   a. Should we be the only ones permitted to use the

development site since we did most of the planning and work? Why? Or, why not?

b. In what way has our project been of value to you? To others?
c. Do you have any ideas for better planning, preparation, working on the project?

III. Equipment

1. Pencil
2. Paper
3. Any other materials that they would need for the site development project.

IV. Procedure

1. The class will be asked to go outdoors observing their immediate environment and write ideas that could develop our site. They should look at what we could add to it or how to improve it.
2. Discuss our ideas and ask questions of the students.
3. Agree on the first project.
4. Plan the project.
5. Work on the project with each student contributing in some way.
6. Students work on the written evaluation.
7. Discuss the project and evaluations.

IN WRITING ACTIVITIES YOU MIGHT WANT TO DEVOTE ONE TO THE PLANNING PROCESS ALONE AND ADDITIONAL ONES FOR EACH SEPARATE DEVELOPMENT SUGGESTION.

Siting A Problem - Erosion

I. Introduction

This lesson is geared to low functioning physically handicapped children. It is to find a small site on the school grounds that we, as a class, determine is a small problem, analyze it and, hopefully, correct it.

II. Questions

1. To lead to the activity, ask:

   a. In taking our walk around the building, what kind of problems might we look for?

2. To initiate the activity, ask:

   a. Which problem would be easiest for us to correct?
   b. Do we need permission from the principal? If so, how shall we explain the problem to him?
   c. How can he help?

3. To continue the activity, ask:

   a. What is wrong here? (Site is just outside classroom. It is a slight incline of eroded dirt).
   b. Do you think it is eroded from wind or water?
   c. Is this a bad problem?

4. To expand the activity, ask:

   a. How can we correct this problem?
   b. Do you think it is good that we correct it even though it is only a small spot of erosion?

5. To evaluate the activity, ask:

   a. (STUDENTS) What could happen if we did not plant grass seed in this spot?
   b. Could the erosion get worse?
   c. (TEACHER) Did children understand concept of erosion?
   d. Was grass planting successful?

III. Equipment

1. Grass seed, trowel, water, rake

IV. Procedure

Eyeball school area. Locate problem which can be corrected. (Site outside classroom of eroded soil). Dig up soil, plant grass seed, rake, water. Check for growth. (Maybe a small fence can be put around corrected area until the grass has grown) Mulch it, if bank is steep.

WHAT IF THEY FIND ANOTHER PROBLEM, SUCH AS LITTER?

Soil

I. Introduction

This lesson would be designed to arouse the child's interest in his surroundings. I would use this final lesson in conjunction with the previous lessons that explored the various areas of our environment. It is hoped that through this, as well as the previous studies, that the student would show a deeper interest in others and in their environment.

II. Questions

A. Lead to activity:

1. To what extent must our natural resources be depleted before people become aware of the problem?
2. How does erosion affect the use of the soil by various plant and animal life?
3. How can we make people aware of this problem?

B. Initiate activity:

1. In our school community, is there a problem with the misuse of soil?
2. Can the people of our community be made to realize that a problem does exist?
3. What is the effect on the plants and animals of the misuse of our natural resources?

C. Continue the activity:

1. Can we consider what kind of problems we face that are affecting our soil?
2. Does it make a difference who is the cause of the soil problem?
3. Should certain groups be exempt from this problem?

D. Expand activity:

1. What can we do to combat these problems?
2. What can we do to expand our fight against soil misuse?
3. What basic test can we run to determine what type of disturbance is being inflicted on our natural resources?

E. Evaluate activity:

1. Did the students consider all the problems carefully?
2. Did they exhaust all areas in their investigation of the various problems?
3. How carefully did the class carry out their experiments on the various types of soil?

III. Equipment

A. Letter head paper for correspondence with various agencies.
B. Data recording materials
1. Paper, pencil, clipboard.

IV. Procedure

A. A class trip by foot to determine if soil abuse is near the school.
B. Determine where problem is and who is responsible for it.
C. Write letters to groups believed responsible for damage being done.
D. Take sample of soil to try to determine the extent of the abuse
E. Record and gather data.

COULD THE STUDENTS ALSO TRY TO RECTIFY THE PROBLEMS THEY DISCOVER (BY USING CHECK DAMS, PLANTINGS, ETC.)? MIGHT THEY WISH TO MOUNT A PUBLIC AWARENESS CAMPAIGN (WITH POSTERS, DISPLAYS, LETTERS TO THE EDITOR)?

ACTIVITY IMPLEMENTATION

Activity Implementation

At the conclusion of the third and final course (Environmental Education Field Studies), the participants were asked to submit a paper outlining their intents to implement environmental studies in their own classrooms. As the abilities of their students varied considerably, so did their responses. All, however, were able to apply some techniques.

The following are exerpts from their reports. Their adaptations and modifications may suggest additional ways to use the environment as a stimulating tool in your on-going curriculum.

"I am a teacher of physically handicapped children (ages 8-13). Since these children are disabled, they are excluded from a great number of activities and experiences in their daily lives. As their teacher, I feel that it is my job to adapt curriculum to make it fit my students' needs. In this paper, I will try to describe some suitable activities that I might be able to use.

From the two days at the PEEC, I felt that the braille trail would be a very adaptable concept to work with. I will try to create a VAKT trail (visual-auditory-kinestic-tactile) that children in wheelchairs could go through. I would perhaps have charts describing a plant; I would allow the children to feel plants; I would blindfold the children for parts of the trail-so that they could key into the sounds of nature; and I would make use of the streams and pond around CDC.

The concept of diversity studies is also a very feasible concept for my class. Many could not do a study on grasses-but all could do a study on trees, shrubs, or flowers.

For my type of child, I feel that quiet time would be extremely beneficial. Many of my children are terminal muscular dystrophy cases; and therefore, have great emotional turmoil. I feel that 'quiet time' could be a very theraputic experience. It could help them to release their anger and fears instead of having them unreleased inside them. Besides this, it would be a good creative experience for the gifted children and the slow children."

"The 'Quiet Time' experience for these children (retarded with multiple handicaps) would be a whole new dimension to their life experience; for they do not, or are not able to remove themselves from others in their surroundings. This activity would expose many of them to nature, as well as individual privacy, for the first time. Each child would require an individual approach and

one-to-one care or observation in quiet time since it might be more traumatic than what one could realize."

"The braille trail was an enlightening experience. When one is first blindfolded the fear and insecurity of not knowing what lies ahead makes a person cautious to the point of being afraid to walk even when someone is leading. One is afraid of tripping or falling. The sound of an approaching car is frightening. However, it is assuring to note that as you move along the trail you become aware of and learn about your environment through your other senses. I found that after a few minutes, I was touching leaves and could feel the wooden posts that held the ropes. One could feel the differences underfoot--paved road, grass, hard ground, soft brush. The sense of hearing was more acute. After walking a braille trail, my class would discuss some of their experiences and feelings produced by omitting sight as one of their senses. Before we discussed their feelings they would be required to write a page about the experience.

Quiet time was probably one of the most rewarding experiences. The children will be able to observe and use their observations in some sort of creative outlet. At first the children will be told to either write about or sketch what they are seeing or thinking or feeling. Later we will attempt certain types of poetry. Quiet time will be a weekly experience for my class and myself throughout the entire school year."

"Our class will perform many of the simplier projects and tasks. Many more will have to be improvised to suit my class's needs because of their physical disabilities. I would like to start in September with a study of the weather and air. We can chart the weather of the day and temperature throughout the year, keep records, and do particulate, sulfur oxide and ozone samplers.

Other activities will be developed as process skills, also, student initiated activities. I have accumulated over the years some environmental materials and will set up learning centers for individual projects.

I will definitely have a quiet time. The time period it will last will depend on the attitude of the class. It will be outside in good weather and then inside to just feel the surroundings. A poetry lesson might be introduced here.

Samples of the water from the pond near our school will be taken to perform various tests of which the pH test is the easiest.

We will also try activities in density, transects, and quadrats of various things that would suit our needs.

In addition, I plan to use various activities that we used in a previous environmental course and incorporate them in with reading spelling and math. I would use step art and sound measurements activities.

Throughout the year I hope to have covered most of the things we have discussed in the courses and will give the students every opportunity to find out for themselves about the environment in their community, what problems there might be, and what might be done about them."

"The Braille Trail is another good example for increasing a mentally retarded child's senses. The girls could make the blindfolds and the boys could construct and lay out the course.

A collection of phototrophic insects would be an excellent activity for my class. Before leaving school, various large logs could be placed by night lights around school for collection and studied the next morning. I am not sure if a diversity could be used, but just physical examination would be very worthwhile to observe what insects are seen at night.

The "Forest Studies", with little modification for my students would be excellent. The use of the thermometer to record various levels of temperature would be a very beneficial study. To be able to read the thermometer, observe their surroundings, and to help record data would be very helpful."

"My class consists of profoundly retarded multiply handicapped, teenage children. None of these children are ambulatory and all are functioning from a six week to eighteen month level of development. Many of these children have spent most of their lives practically immobile in cribs or wheel chairs. Needless to say I will not be teaching environmental education as such but the course was helpful because a reverence for nature and respect for life is essential for a teacher of these children. Also, as I will try to point out, some of the activities from the field study program can be used meaningfully for my class, if they are adjusted down to the ability of each individual child.

Action Socialization Experience - purpose---to encourage participator to extend capabilities for survival. Problem---child lacks incentive to move even enough to protect himself from falls by adjusting his balance.

Activity--child is placed in a downhill position on the grass with his extremeties or objects under his body to create a slight feeling of discomfort as an encouragement to right himself and achieve comfort. Slight pushing of the child toward the downhill side may be necessary to initiate movement.

Braille Trail--purpose--to encourage independent mobility and awareness. Problem--child can ambulate by "scooting" along floor on his buttocks but he seldom ventures beyond area five feet in diameter. Activity--child is encouraged to scoot along fence much as a baby takes initial steps along bars of a playpen. The area is gradually increased while the fence is replaced by rope, twine, etc., until the child will move independently. The area used can start as a grassy plot and graduate to a variety of textures such as mud, sand, snow, etc. The surface can vary from level to sloped, uneven, rough, slippery, etc.

Quiet Time--purpose--relaxation and sensory stimulation. Problem-child is rigid with tension and is therefore unable to notice environment. Activity--simply allow the child to assume a comfortable position outdoors in the sunshine, cool shade, filtered sunshine, light snow, or rain while on the grass, leaves, pine needles, snow, or partially emersed in water. This type activity is particularly important to institutionalized children since they seldom get outside or if they do it is just for a ride and they don't get to feel and smell the earth and grass etc."

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APPENDIX

THE USOE NATIONAL DIFFUSION NETWORK

During 1975-76, Project KARE is operating as a Developer/ Demonstrator Project in the USOE National Diffusion Network. Funding is provided directly from the United States Office of Education (USOE), Washington, D.C., under the Elementary and Secondary Education Act (ESEA) of 1965, Title III, Section 306.

The National Diffusion Network is designed to enhance opportunities for sharing educational success. Components of the network are State Facilitators (SFs), Developer/Demonstrators (D/Ds), and Adoption/Adaption Schools (Adopters). The prime objective of the network is to provide avenues for SFs, D/Ds and Adopters to interrelate such that educational expertise of D/Ds is transmitted to the adopters. That which is transmitted might consist of processes, materials, or skills.

Project KARE, beginning in 1971, developed a process for strengthening environmental studies in local schools. Learning materials including "curriculum activities guides"were produced. Skills for implementing the KARE Approach are being achieved by teachers, administrators, students, and community leaders who participate in KARE training workshops. All project activities were carefully evaluated by an independent evaluator, ERANDA, Inc., of West Chester, Pennsylvania. During Spring, 1975, Project KARE participated in two national procedures which assay effectiveness and exportability of innovative educational programs. In June, the project was "validated" by the Pennsylvania Department of Education and USOE as a successful, exemplary educational practice worthy of widespread dissemination. Concurrently, Project KARE was "certified" by the Joint Dissemination Review Panel of USOE and the National Institute of Education as an educationally-sound innovation verified by accepted evaluation procedures.

Accordingly, Project KARE was selected and funded by USOE as a Developer/Demonstrator Project. As such, the project is required to provide a majority of services to local education agencies outside Pennsylvania. In addition to conducting training workshops, the project is producing and disseminating various curricular and awareness materials, and maintaining demonstration schools for on-site visitations by potential Adopter schools.

The role of State Facilitators is to assist Adopter schools in determining educational needs; to disseminate relevant information to local schools about successful programs in the network; and to monitor the installation, operation, and assessment of successful adoptions. Thus, the State Facilitator provides assistance to match potential Adopter schools with Developer/Demonstrators. In Pennsylvania, Project RISE, King of Prussia, serves as State Facilitator.

ENVIRONMENTAL STUDIES ACTIVITIES

When designing environmental studies activities, one must take into account the level of experience and understanding of the participants. Accordingly, three levels of activities have been developed.

Awareness activities allow participants to make observations and draw conclusions about real things in their environment. Transitional activities deal with concern and/or interests that have grown out of awareness activities. These activities allow groups to focus on problems which have been defined and which are successfully dealt-with within the existing school time structure. Transitional activities lead to operational activities, which consist of complex problem investigations that may not be fully completed during a formal course of study.

Awareness and transitional activities are presented in a question-oriented format. This approach was chosen because it allows students to respond as individuals; because it diminishes the authority-figure role of the teacher; and because it implies that there are few-if any-ultimates which can be applied to real world situations. By using this format we are not implying that anyone can pick up a printed activity, ask the sample questions and expect the specific activity to magically follow. Individual teachers may have to formulate their own questions to guide their students. No special format is used for operational activities. Generally, a process is described and then the participants become involved with an environmental situation using the process. A simulation developed by KARE, REPS (Realistic Environmental Problem Simulation), represents one such process.

Five categories of questions are used to involve the co-learners in activities. Questions which lead to the activities are intended to direct thinking toward a general area of investigation. Those to initiate require action if they are to be answered. Questions to continue help to give the problem more definition. Questions to expand allow branching-off points and suggest areas of further investigation. Those which are used to evaluate help the co-learners to assess successes and failures and to determine progress.

Activities should be developed with process skills in mind. The purpose of a process-oriented development is to set the basis for student-initiated activities. Students will be better able to deal with investigations of their own design if they have had previous experience with process skills.

The process skills are divided into levels which parallel those of

the activities. They are as follows:

1. Awareness level
   a. observing
   b. categorizing
   c. comparing
   d. measuring
   e. inferring
   f. questioning

2. Transitional level
   a. predicting
   b. data collection
   c. data processing
   d. data evaluation
   e. formulation of hypotheses

3. Operational level
   a. problem recognition and definition
   b. problem analysis
   c. data processing
   d. data evaluation
   e. data utilization

Reference: Sparks, P.M., Sexton, A.D., et al, A Curriculum Activities Guide to Solid Waste and Environmental Studies, Institute for Environmental Education, Cleveland, Ohio 1973

"QUIET TIME"

Prepared by Randolph R. Tully

Alias: Aesthetic Experience, Solitary Experience, Sensory Experience, Etc.

Call it what you may, "Quiet Time" can be one of, if not the, prime experience of an environmental program. Its purpose is complex and deep and can vary with your approach and the interests and abilities of your kids. An initial goal might simply be awareness, the development of the powers of observation, the renewed ability to fully see, hear, smell and feel what is happening in the environment. The National Park Service uses "Quiet Time" to develop a "sense of place", to fully experience a particular site. At times participants have had extremely emotional experiences that related to the deepest of religious feelings. More mundane purposes might include: the development of writing skills, learning to effectively communicate orally, sharpening artistic abilities, or experiencing simplified publication techniques. The prime goal, though, would be to develop in the kids, an improved attitude toward the environment and their role in it.

Now how do you get there, what do you do, what are the techniques? First of all, the kids should be well briefed as to what they are expected to do and expected not to do. Then there is quiet, most importantly, quiet. I don't mean the elimination of all sounds, but there should be no sounds from any of the participants and none directed to them. The only sounds allowed are the ambient ones, ones always there but seldom heard. Solitude might be next in importance. Place each child such that he won't be distracted by or be able to distract the rest. At the start of each experience should be a period of meditation while the senses are allowed to work, and ideas begin to flow. This should be a period of observation in its broadest meaning using all the senses. It should be stated at the beginning of a "Quiet Time" that something on paper (written or sketched) would be required of each participant. Usually the form of response is left completely up to the child.

If writing, it can be in the form of lists, sentences, stories or poems. Poetry might be tried as rhyming verse, free verse, haiku, or cinquaine. Haiku is a traditional form of Japanese poetry dedicated to nature. The rules are simple: three lines, five syllables in the first, seven in the second and five in the third; it does not have to rhyme. Cinquaine poetry is a westernized,

more complex, five-line form of haiku. The syllable structure of cinquaine is two syllables in the first line, four in the second, six in the third, eight in the fourth, and two in the fifth. A modified form of cinquaine is as follows. The first line contains only one word and is the topic of the whole poem. The second line contains two adjectives that describe the topic. Three verbs in the third line tell what the topic does. The fourth line is two adverbs, and the fifth line is a synonym of the topic. In this modified form the number of syllables is unimportant.

If the sketching route is taken, try to keep it simple, using pencils only, or at most, a minimum of colors. Remember here that the over-all experience is important. Do not spend an over-abundance of time in complicating a technique.

The amount of time needed varies quite a bit with age and experience. A third grader on his first try may only last ten minutes while a high school student would feel pressured with only 45 minutes. The temporal frame of reference for each is different though, and 10 minutes for one may be as good as 60 minutes for another. Try extending the time allowed as the children become more familiar with what to do and how to approach "Quiet Time".

Immediately following the experience, gather everyone together to discuss what happened, to read what they wrote. This allows them to share feelings they may not have known they had and to spread any insights they may have gained. Each child too, will grow as he sees just how differently other people view what he just saw and felt.

A good outgrowth of this activity would be to provide each kid with a ditto master, teach him how to use it, and let him write his own particular contribution on it. Take all of these pages, collate them and staple the new books together. It's nice to see yourself in print.

If some exceptional things come out of it, try publication through an established medium. The school and town newspapers would be local outlets. The next step up could be a regional or even international publication. Kids for Ecology is a small magazine written almost exclusively by and for kids. If you decide to submit material, please include your name, address, zip code, age, grade and school on each item; and mail to Kids for Ecology, P.O. Box P-7126, Philadelphia, Pennsylvania, 19117. Periodically the Christian Science Monitor publishes a page entitled "Footprints of Young Explorers". In it go stories, poems, paintings, and drawings by preteen children. You can send entries to Children's Page, Box 353, Astor Station, Boston, Massachusetts 02123. Cricket Magazine, 1058 Eight Street, La Salle, Illinois 61301, publishes

works submitted by children. Another publication written entirely by children is Kids Magazine. Their address is 747 Third Avenue, New York, New York 10017.

For the teenage students, several other magazines might be more appropriate. Literary Cavalcade, Scholastic Magazines, 50 West 44th Street, New York, New York 10036, sponsors art, and writing contests. Teens may submit articles to Read Magazine, Xerox Publications, Education Center, Columbus, Ohio 43216. Illinois History, Ill State Historical Society, Centennial Building, Springfield, Illinois 62706 includes student contributions and covers the Midwest. You might try contacting your own local magazines and newsletters for publication of other special interest articles.

To give you some examples of what may come from a "Quiet Time", I'm including a few contributions below:

BY THE CREEK

Little creek so
  Young and quick,
There's the stream
  So old and sick.
People pass there
  Day and night,
Throwing trash
  With all their might.
Saying,
  "Little Creek so
  Young and quick
We don't want
  to make you sick"!

Carolyn Dixon
6th Grade

Brian Flagler
1st Grade

THE ANTS

The little ant he's a working away
He never stops to rest or play.
The cute little ant, he spies a rock
Up, up, up, right up to the top.
The little ants are building a house
It's much too tiny even for a mouse.
The tiny ants they seem to say,
It's my house, it's my house, get away! Get away!
But every creature must have a home,
Inside and outside they do roam.
If all the people will take more care,
The little ants will do their share.

Barbara Woodruff
3rd Grade
10 minutes of "Quiet Time"

I don't usually smoke, but I stopped first for cigarettes. That's probably because I am nervous about this.

I hear two things, children and birds. I envy them both. Why? They are free and innocent.

This stump will do.

John Milton once asked which should be preferred, a fool's paradise or a wise man's hell. Unfortunately, there is no chance for choice for us.

The sounds of the children are as a song- How seldom do we listen; how seldom we join in.

By a public school administrator on a one hour quiet time as part of an EE Retreat.

People rarely take the time to just sit under a tree to meditate. There always seems to be something better or more significant to do. Maybe a "Quiet Time" will prove the worth of solitude, quiet and slowing down.

STEP ART

Do it with what you've got, don't let lack of materials stimy your kids creativity. You can always find some dirt, berries, soot,leaves, wall textures, bark, tombstones, wood, sticks, sand, pebbles, trash, magazines, newspapers, coat hangers. Add to that some glue, paper, tape, paint or whatever you have on hand and let the kids go. The point is awareness, awareness of the immediate environment that the kids find themselves in. What can be done with our commonly considered wastes, are there alternative uses for these materials? Can dirt be paint? What textures can road cracks make? Try some rubbings, collages, natural pigments, impressiors, casts, constructions, or plain old drawings.

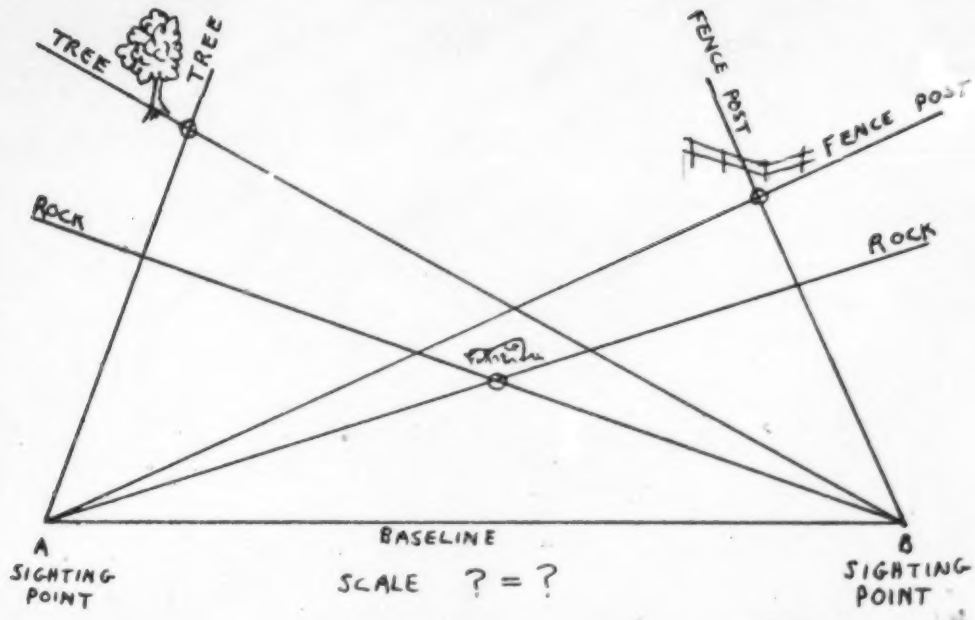
PHOTOGRAPHY & KIDS

Don't burden yourself with technique or worry about immediate irrelevancies like exposure, focus or depth of field. Take the easy and educational way and learn with the kids. A few Kodak X-15 cameras (or any similar model) in the hands of your students are the catalist necessary for a stimulating learning experience. All that need be done is point and push (the camera and shutter release that is). As the students gain experience and learn from their many early mistakes, their proficiencies, and yours, will grow and mature. A great advantage to nonadjustable cameras is the freedom they allow you. Technical problems are not your concern at this point; so you can devote yourself fully to your subject matter, to composition, to lighting, to the art of your work.

NOTE: STEP (Students Toward Environmental Participation) is a project of the US National Park Service.

PLANE TABLE MAPPING

Prepared by Randolph R. Tully



1. Determine a baseline along one edge of the area you intend to map. Make all subsequent sitings from the ends of this line.

2. Tape your map-to-be on a suitable, portable table. Draw a baseline on the map. Arbitrarily locate Point A.

3. Measure the real distance from A to B. Determine an appropriate scale for your map. Locate B, according to scale on your map.

4. Orient your table directly over point A such that by sighting down the baseline on the map, you will see the real point B. Your table should not move for the first set of sightings. If it does, reorient it with the baseline.

5. Using a straight edge, sight from point A on your map to each of the points you intend to plot. Draw a line down this line of sight. Label each line. When choosing points to sight to, keep in mind their visibility from point B.

6. Move your table and map to the real point B. Sight back along the baseline and orient your table again. The mapped baseline should correspond to the real baseline. Again the table must not shift for the duration of the sightings.

7. With the straight edge, sight from mapped B to all the points you previously sighted. Draw and label all these lines.

8. All your "data collection" is complete. Now circle or darken each of the paired intersections. Erase all connecting lines. Label each point as to what it represents. These will be spatially positioned on your map according to the scale you determined.

9. With these as points of reference, locate whatever other significant sites you wish to. Plot any other important data, such as north, the direction to school, up-hill, down-hill, etc.

10. Expansions:

    -At each plotted point, draw a picture of what was sighted,
    -Use the map to locate different pollution problems or intensities (trash, noise, erosion, etc.),
    -Plan a nature trail and plot it on your map,
    -Use this triangulation technique to measure distances or heights,
    -Make a scale model of the area mapped,
    -Use several maps of adjoining areas to make one larger composite map.

PINTO BEANS AND AIR POLLUTION

Pollution, depending on the concentration, duration, and type, can and does damage many plants.

"The cost of agricultural losses in the United States was recently estimated to be in the neighborhood of $500 million annually. Losses to agronomic species in California alone are estimated to amount to $132 million, with a 50 percent loss in citrus fruit. No estimates have been made of the real economic loss caused by suppression of growth, delayed maturity, reduction in yield, and the attendant increase in the cost of crop production. Since air pollution is growing in intensity in many areas of the country, the losses from vegetation damage also are undoubtedly increasing."

Because of their sensitivity and ease of culture, pinto beans make a convenient start at qualitative air pollution analysis. They are particularly sensitive to sulfur dioxide and show it by bleached spots on the leaves between the viens. The eleventh day after emergence is their peak of sensitivity. So plant your beans in a pot. When they just emerge from the soil, transport them to the site you intend to test (a heavily trafficed corner, down-wind of an industry, wherever). Count out fourteen days (the extra three for symptom development) then retrieve your automatic-continuous-14-day-SO_2 sampler. Check for sclerotic spotting and record your findings. One possible problem you may encounter is that some nutrient deficiencies can cause similar damage. This can be checked by planting a control set in the same type soil, but growing it in a "clean" environment.

Pinto Beans

Sensitivity - SO_2

Indication - Sclerotic spotting on leaves

Peak of sensitivity - 11th day after emergence

QUOTE From Air Pollution
INJURY TO VEGETATION,
Ibrahim Joseph Hindawi,
U.S. Department of Health, Education and Welfare.

DIVERSITY INDEX

Prepared by Alan D. Sexton

The statistical analysis of some kinds of biological data may be done by computing the diversity index. Generally speaking, the greater the diversity, the healthier the biotic community. There is presently no one method of computing this index which is universally accepted by the professionals. They range from simple ones to ones that are best calculated by computers.

The sequential diversity index is explained below. Others may be found in some of the references listed at the end of this section.

The sequential diversity index is found by dividing the number of runs by the number of specimens as shown below:

$$\text{Diversity Index} = \frac{\text{number of runs}}{\text{number of specimens}}$$

A run is a set of like individuals picked up or observed respectively. A run ends when an individual of another kind is found. Therefore, a run can consist of only one individual. The specimen being observed need only be compared with the previous one. If it appears to be similar, it is part of the same run; if not, it is part of a new run. The more runs for a given number of specimens, the greater the diversity.

Suppose that an investigator is observing cellular algae on a microscope slide. As he scans the field of view from left to right, he observes the following: first, five cells of the same kind which he calls type S; second, ten cells of another kind which he calls type I; third, five cells of type S; and finally one cell of type U. At this point the investigator has four runs and 21 specimens. The usual procedure would be to continue in a like manner until 200 specimens have been counted, then the diversity index would be computed.

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PETERSEN POPULATION ESTIMATION FORMULA

Prepared by Alan D. Sexton

$$P = \frac{m\,(u + r)}{r}$$

P = the estimated population

m = the number of individuals marked and released in the precensus

u = the number of unmarked individuals caught in the postcensus

r = the number of marked individuals caught in the postcensus (returns)

The precensus is the first sampling. The postcensus is the second sampling. Ample time must elapse between the two samplings for the marked individuals to become randomly distributed in the population. For most wild populations this time should be at least one week; however, local conditions may shorten or extend this time.

Students can be introduced to this procedure in the laboratory by using various combinations of marked and unmarked beans. A good number to use is 1000 beans. Begin by adding 10 marked beans and removing 10 unmarked beans (time can be saved by having pre-marked beans). Mix the beans and then remove a handfull. Compute "P". Continue adding 10 at a time and computing "P" each time until 150 marked beans have been added.* By analyzing the results the students can determine which combinations of m, u, and r give the best estimates of "P".

*A final step is to count all the beans.

Reference: Beck, A.M., The Ecology of Stray Dogs, York Press, Baltimore, Md., 1973.